

## Towards ICF implementation in menopause healthcare: a systematic review of ICF application in Switzerland

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### Summary

**AIMS OF THE STUDY:** To present a systematic literature review on the application and degree of implementation of the International Classification of Functioning, Disability and Health (ICF) across different health conditions and regions in Switzerland in order to develop an ICF classification of the climacteric syndrome in the medium term.

**METHODS:** A systematic literature search was conducted through Embase and Medline covering the period between 2011 and August 2016. Inclusion criteria were the term ICF in title or abstract and Switzerland as the workplace of the first author. Identified publications were analysed as descriptive statistics.

**RESULTS:** A total of 83 articles were included in the analysis. Forty-seven different first authors from 24 different institutions were identified. The majority of publications were from Swiss Paraplegic Research (68.7%) and focused on neurology (31.3%). Forty-six cohort studies were identified. In most of them, the ICF was used to set up a general language for comparing patients' information (82.9%). Only one paper from the medical specialty gynaecology was identified; this was on breast cancer. No paper on the menopause was found.

**CONCLUSION:** In Switzerland, the ICF is actively used in various areas of healthcare, especially in the field of neurology and rehabilitation. There is a need for ICF core sets in other medical fields, such as menopause healthcare, in order to accomplish the goal of the European Menopause and Andropause Society, which is a healthcare model for healthy menopause and aging.

**Key words:** *International Classification of Functioning, Disability and Health (ICF), review, menopause, climacteric syndrome, Switzerland*

### Introduction

The menopause is a physiological event in a woman's life and a natural part of the aging process. As the menopause is associated with a high prevalence of somato-psycholog-

ical symptoms [1], called climacteric syndrome, and an increased risk of developing non-communicable diseases [2] and major health issues [3], the appropriate management of the menopause is crucial, not only for the woman herself but also from a socioeconomic standpoint. In 2016, the European Menopause and Andropause Society (EMAS) proposed a new healthcare model for healthy menopause and aging [4]. The aim is to set up a personalised care plan with short-, mid- and long-term goals in the context of physical, psychological and social functioning, incorporating the International Classification of Functioning, Disability and Health (ICF), endorsed by the World Health Organization (WHO) in 2001 [5]. The overall aim of the ICF is to "establish a common language for describing health and health-related states in order to improve communication between different users" and to "permit data comparisons and a systematic coding scheme for health information systems". Central to the ICF is the patient's "functioning", whereas health conditions are still classified in the International Classification of Diseases, ICD-10 [6]. In order to translate the holistic EMAS healthcare model for a healthy menopause into practice, as a first step the climacteric syndrome (ICD N95) should be mapped and differentiated according to the ICF to create a common language facilitating interdisciplinary communication. To do so, we decided to assess the various applications and degree of implementation of the ICF across different health conditions and regions in Switzerland, to gain a first impression on its implementation and to draw practical conclusions for its application to the concept of healthy menopause and ageing. The aim of this systematic review was to identify all published literature on ICF application in Switzerland.

### Materials and methods

#### Search strategy

In August 2016, a literature search was conducted using the electronic databases PubMed and Embase covering the past 5 years (2011–2016). The terms "ICF", "international classification functioning", "international classification of functioning disability and health", "ICF classification",

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“disability evaluation” were used alone or in combination and complemented by the terms “Switzerland” or “Swiss”. The last search was performed in August 2016. The full electronic search strategy for Embase is presented in appendix 1.

### Inclusion criteria

To be included, publications had to mention “ICF” or “International Classification of Functioning, Disability and Health” in either the title or the abstract. The first author’s institution/workplace had to be in Switzerland. Publications in English, French and German were considered. In a next step, only full publications were further considered. Thus, letters, conference abstracts and publications on the ICF Children and Youth Version (ICF-CY) were excluded. To make sure no relevant publication was left out, related citations and important references to this subject were included if they matched the inclusion criteria. The literature search and eligibility assessment were performed by one researcher.

### Data collection and analysis

The identified publications were analysed as descriptive statistics. We developed a data collection sheet, one researcher collected the following data from included articles and a second researcher checked the extracted data: year of publication, journal, authors, and first author’s place of work and area of interest. We reported the studies that examined cohorts in more detail, including the cohort size, gender distribution, mean age of the cohort, study design and type of the ICF application. Disagreements between the two researchers were discussed until consensus could be reached. The methods used in this study were in alignment with the PRISMA statement [7]. However, as this was a review of types of ICF application rather than outcome studies, some aspects of the PRISMA guideline were not applicable (risk of bias and result synthesis). Specifically, we analysed the descriptive or organisational processes concerned with ICF implementation (qualitative analysis) rather than numerical outcome measures (quantitative analysis).

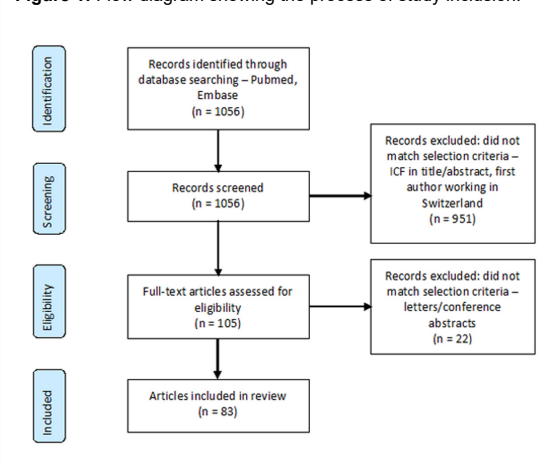
## Results

### Characteristics of articles

In total, 1056 abstracts were screened and 105 met the inclusion criteria. Full publications were then assessed for eligibility, which left 83 articles (81 in English, 2 in French) for inclusion in the systematic review (fig. 1) [8–90]. The publication rate per year slightly decreased from 22 (26.5%) articles in 2011 to 9 articles (10.8%) in 2015. The articles were published in 39 different scientific journals including *Swiss Medical Weekly* [27, 78]. The majority of articles were published in the *Journal of Rehabilitation Medicine* (n = 10; 12.0%) [37, 49, 52, 59, 64, 71, 74, 76, 79, 89] or *American Journal of Physical Medicine & Rehabilitation* (n = 9; 10.8%) [11, 14, 17, 18, 30, 32, 39, 46, 65]. The 83 articles identified were first-authored by 47 different authors of whom two, Felix Gradingier [19, 41, 50, 51, 55] and Reuben Escorpizo [24, 28, 30, 34, 42, 70], first-authored at least five articles (6.0%). There were 171 co-authors of whom Alarcos Cieza (34 articles; 41%) [10, 13, 17, 18, 20, 21, 25, 29, 35, 38–41, 47, 48, 50, 51,

53–55, 64, 65, 67, 69, 72, 73, 76, 77, 79–81, 86, 88, 89] and Gerold Stucki (28 articles; 33.7%) [10, 12, 16–19, 21, 25, 28–30, 34, 35, 38–40, 46, 47, 49, 50, 65, 75, 76, 79–81, 88, 89] contributed to the most publications. Overall, 24 different institutions or workplaces were identified, which were cited 138 times in the publications (table 1). The most frequently cited workplace was the Swiss Paraplegic Research (SPF) in Nottwil (n = 57, 68.7%) [10–12, 15–18, 20, 22–25, 28–30, 32, 34, 35, 37–40, 42, 43, 46–53, 57, 59, 63–70, 73, 74, 76–81, 83, 84, 86, 88–91] and the ICF Research Branch in Nottwil (n = 28, 33.7%) [10, 17, 19–22, 25, 28, 29, 31, 34, 38, 40–42, 49–51, 55, 64, 65, 79–81, 83, 86, 90, 91]. Either one or both of the SPF or ICF Research Branch were cited in 62 articles; 23 first authors were working for both institutes in parallel. The Department of Health Sciences and Health Policy at the University of Lucerne contributed to 25 articles (30.1%) [11, 12, 15–17, 25, 32, 34, 37, 38, 47, 49, 57, 63, 64, 66, 68, 75, 77–81, 88, 89]. However, all authors associated with this department were also linked to the SPF. The remaining institutions contributed to only three (2.4%) or fewer articles. Most articles focused on neurology (n = 26; 31.3%) [15, 17, 18, 20, 23, 25, 30, 35, 37, 44–46, 48, 52, 53, 58, 59, 62, 63, 67, 69, 72, 73, 80, 86, 87], e.g., spinal cord injury (n = 19, 22.9%) [15, 17, 18, 23, 25, 30, 35, 37, 44, 46, 48, 52, 53, 59, 63, 67, 69, 72, 80]. Others focused on work-related problems (n = 11; 13.3%) [8, 12, 22, 33, 36, 40, 77, 83–85, 90], such as vocational therapy (n = 6; 7.2%) [8, 22, 40, 83, 84, 90] and the evaluation of work capacity (n = 5, 6.0%) [12, 33, 60, 77, 85], respectively. The medical discipline gynaecology and obstetrics was represented by only

**Figure 1:** Flow diagram showing the process of study inclusion.



**Table 1:** Overview of the origin of all included articles (n = 83).

Place of work*	n	%
Swiss Paraplegic Research (SPF)	57	68.7
ICF Research Branch	28	33.7
Department of Health Sciences and Health Policy, University of Lucerne	25	30.1
Academy of Swiss Insurance Medicine, University Hospital Basel	3	3.6
Swiss Paraplegics Centre	2	2.4
Zurich University of Teacher Education	2	2.4
REHAB Basel, Swiss Paraplegic Centre, Basel	2	2.4
Department of Paediatric Neurology, University Children's Hospital, Inselspital	2	2.4

\* Articles could identify more than one place of work.

one article on breast cancer (n = 1, 1.2%) [29]. Eighteen articles (21.7%) either could not be related to a single medical discipline or discussed the ICF on a meta-level (fig. 2) [9–11, 14, 26, 28, 32, 39, 43, 47, 49, 57, 60, 64, 65, 79, 88, 89].

In a next step, we focused on the 46 cohort studies [8, 12, 15, 20–22, 25, 27, 29, 31, 35–37, 40, 41, 47, 48, 50–56, 59, 60, 63, 66–69, 71–73, 78–81, 83–90] of which 35 (76%) examined patient cohorts [8, 12, 15, 20, 22, 25, 27, 31, 35–37, 41, 47, 52, 53, 55, 59, 63, 66–69, 71–73, 78–81, 83, 86–90] and 11 (23.9%) [21, 29, 40, 48, 50, 51, 54, 56, 60, 84, 85] medical experts in the respective area. All cohort studies used a noninterventional, nonrandomised study design. In the following paragraphs, the two types of cohort studies are analysed separately.

In the 35 cohort studies involving patients, the cohort size ranged from 1 [67, 69, 83, 91] to 18 760 [66] participants. The gender distribution varied from 100% female [83] to 100% male [67, 69, 91], and mean age varied between 23 [69] and 69.5 years [27]. However, six studies (13%) [12, 36, 68, 78, 81, 88] did not report on the cohort’s gender or age. Twenty-six cohort studies (74.3%) used a cross-sectional study design [12, 15, 20, 22, 25, 27, 31, 35–37, 41, 47, 52, 53, 55, 63, 66, 72, 79–81, 86–90] and 15 (42.9%) a qualitative approach [15, 20, 31, 36, 37, 47, 52, 53, 55, 71, 72, 86, 88–90]. Twelve (34.3%) studies were multicentre trials [15, 25, 35, 41, 47, 52, 55, 63, 72, 73, 80, 81]. Furthermore, two retrospective studies (5.7%) [68, 78], one prospective study (2.9%) [71] and one case-control study (2.9%) [15] were identified (table 2).

In most studies (n = 29, 82.9%) the ICF was used to code, for example, patients’ information from interviews, focus groups or patient history, into a generally accepted language [12, 15, 20, 22, 25, 31, 35–37, 41, 47, 52, 53, 55, 59, 63, 66, 68, 71–73, 78–81, 86–89]. This information was used to summarise patients’ needs, such as perceived problems in functioning in patients with spinal cord injuries (n = 9, 25.7%), to compare patient groups, such as sex differences [37, 41, 55, 59, 72, 78–80, 89], to analyse correlations (n = 9, 25.7%), such as how self-efficacy and self-esteem predict participation in patients with spinal cord injuries [15, 47, 53, 63, 66, 68, 71, 73, 88], to validate existing measures, for example, the ICF Core Set for stroke, and to develop new measures to assess patient’s function-

ing, for example, the New Lucerne ICF Based Multidisciplinary Observation Scale (LIMOS) for Stroke Patients (n = 7, 20.0%) [12, 20, 22, 31, 81, 86, 87]. Two articles (5.7%) linked patients’ information to the ICF in order to match it to the theoretical ICF concepts [36, 52] and two studies (5.7%) commented on the psychometric properties of the ICF when applied to patients with neurological problems [25, 35]. Four (11.4%) case studies illustrated the application of ICF-based tools [8, 67, 69, 83], and in two studies (5.7%) new measures based on the ICF were directly developed [27, 90] (table 3).

Within the 11 studies investigating cohorts of medical experts, the cohort size ranged from 15 [60] to 123 participants [51]. The gender distribution varied from 88% female [29] to 83% male [21], and mean age ranged from 36 [84] to 51 years [85]. However, four studies (36.4%) [40, 50, 56, 60] did not report on gender and age.

Eight studies (72.7%) aimed to identify problems and resources relevant to patients from the perspective of their therapists [21, 29, 48, 50, 51, 54, 56, 84]. Most of them (n = 7, 63.3%) used this information to develop new ICF Core Sets, for example, for sleep disorders or head and neck cancer [40, 50], or to validate already existing ICF Core Sets, e.g. the Core Set for chronic obstructive pulmonary diseases or the comprehensive Core Set for vocational reha-

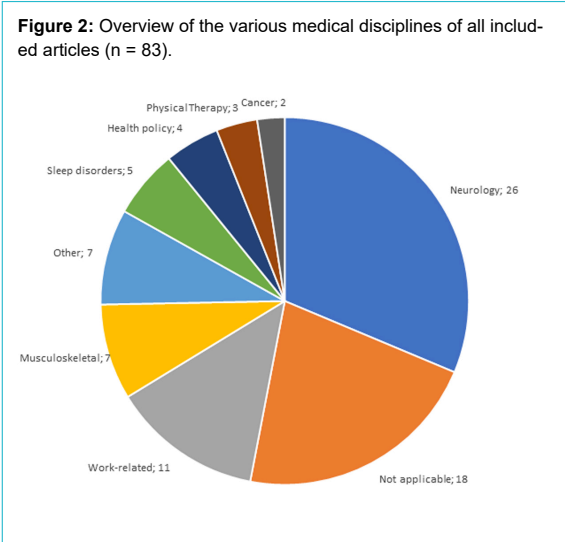
**Table 2:** Overview of study designs of included studies using patient cohorts (n = 35).

Method*	n	%
Cross-sectional	26	74.3
Qualitative	15	42.9
Multicentre	12	34.3
Psychometric	9	25.7
Quantitative	8	22.9
Case report	5	14.3
Mixed methods	4	11.4
Literature review	2	5.7
Retrospective	2	5.7
Case-control	1	2.9
Pilot study	1	2.9
Prospective	1	2.9
Delphi	1	2.9

\* Studies could identify more than one method.

**Table 3:** Overview of types of application of the ICF of included cohort studies (n = 46).

Type of Application for ICF	n	%
<b>Cohort studies involving patients (n = 35)</b>		
Code patient’s information	29	82.9
Summarise patient’s needs	9	
Compare patient groups, correlations	9	
Compare with further measures	7	
Link to theoretical concept of ICF	2	
Psychometric properties	2	
Illustration of the application of ICF-based tools	4	11.4
Development of new measures	2	5.7
<b>Cohort studies involving medical experts (n = 11)</b>		
Code patient’s information	8	72.7
Compare with further measures	7	
Link to theoretical concept of ICF	1	
Illustration of the application of ICF-based tools	2	18.1
Development of new measures	1	9.0



bilitation, from the perspective of medical experts [21, 29, 54, 84, 85]. Seven studies (63.3%) used a Delphi survey to reach consensus between the medical experts [21, 29, 48, 50, 54, 56, 84].

## Discussion

The WHO introduced the ICF concept 15 years ago. This objective of this review was to quantify ICF implementation in Switzerland in the past 5 years. This should form a base for the development of an ICF classification of the climacteric syndrome. We found that (1) the ICF was actively used in various areas of healthcare with (2) the main focus being rehabilitation medicine and (3) the aims of studies varied broadly.

In contrast to one of the most recent literature reviews in 2009 [92], most papers identified for this review discussed the active implementation of the ICF and not only the theoretical framework. Furthermore, research has focused on the development of core sets [10, 12, 20, 21, 29, 34, 35, 40, 50, 54, 56, 81, 84–86] and on the application of the ICF concept to condition-specific management [8, 9, 16, 26, 58, 60, 71, 74, 75, 83]. This finding supports the increasing acceptance of the ICF and improvement of its classification.

However, the extent of its implementation varied significantly between different health conditions. For some specific health conditions, the ICF was applied extensively, for example, for spinal cord injuries, vocational therapy and musculoskeletal disorders. Sleep disorders were also represented frequently owing to the recent development of the ICF core set for sleep. Only a few papers specifically covered physical therapy. However, physical therapy was often co-represented in articles focusing on other areas such as neurology, vocational therapy and musculoskeletal disorders. As the ICF is fairly unknown in most medical fields other than geriatrics and rehabilitation medicine, it is not surprising that most studies were performed at and published from either the ICF Research Branch or Swiss Paraplegic Research (SPF), both located at the Paraplegic Centre in Nottwil, Lucerne. The leading role of the ICF Research Branch can be explained by its collaboration with the WHO Collaborating Centre for the Family of International Classifications in Germany (at DIMDI), whose objective is to develop, disseminate, implement and update the WHO Family of International Classifications [93]. This is a good starting point for other medical fields in Switzerland to ensure and encourage more diverse results if other authors also contributed to the subject. For the medical specialty gynaecology, we could identify only one paper, on the validation of the core set for breast cancer [94]. So far, the ICF has not been applied in menopause medicine anywhere, and thus there is a great opportunity for learning from other medical fields. In many cases the ICF has been successfully used to facilitate interdisciplinary collaboration [91], to develop comprehensive tools for measuring functioning [27] or to validate existing tools [19]. These findings are promising for a future application of the ICF to the model of menopause healthcare. As the treatment of other health conditions, for instance spinal cord injuries, is also multidimensional and requires an interdisciplinary network of health professionals, the successful implementation of the ICF could serve as a role model for the devel-

opment of a new clinical approach to the healthcare model of menopause healthcare based on the ICF. However, even though many articles showed the advantages of ICF implementation, the applicability of those results to other settings is often difficult.

In order to achieve this, the ICF would need to undergo a menopause-specific development. Most of the above-described papers relied on ICF core sets or similar summaries of the most important items for their specific case. Such samples need to be developed for the application of the ICF for menopausal women, as its comprehensive size with more than 1400 items is not practicable. Also, to effectively use the ICF for measuring functioning, existing measures to assess the climacteric syndrome such as the menopause rating scale (MRS)-II [95] would have to be linked to the ICF.

This review was subject to four main limitations. The first shortcoming was that only papers from the past 5 years were included, even though there is a much larger number of articles published on the ICF in Switzerland during the past 15 years. Therefore, the pattern developed in our report might not be complete. However, as we aimed to analyse current use of the ICF, the results are thought to be rather accurate. Another shortcoming is the geographical limitation to Switzerland. There might be more research on the use of the ICF in menopausal health in other countries. However, an expanded research on Pubmed for ICF and menopause did not have any substantial results. Only two electronic databases were searched, Pubmed and Embase. Thus, some articles might have been overlooked. Finally, the literature search was conducted by only one person. Though the amount of objective data collected was unlikely to be affected by this, more subjective data, such as the categorisation of the study's aim, might be biased by the author's own perceptions.

In conclusion, in the 15 years of its existence, the ICF has had a big impact, especially in the field of neurology and rehabilitation, in Switzerland. However, worldwide, there is a lack of research on the application of the ICF in other medical fields such as gynaecology and particularly menopause medicine. The great expertise and experience at the Swiss ICF Research Branch on how to implement the ICF into practice are a valuable resource for other medical experts, such as those dealing with menopause healthcare. Thus, our next aim is to set up an ICF core set for the climacteric syndrome [10].

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## Appendix 1

**Embase search strategy**

1. international classification of functioning, disability and health/exp
2. international classification of functioning, disability and health
3. icf
4. international classification functioning
5. icf classification

6. 1 or 2 or 3 or 4 or 5
7. switzerland/exp
8. switzerland
9. swiss/exp
10. swiss
11. 7 or 8 or 9 or 10
12. 6 and 11
13. [2011-2016]/py
14. 12 and 13